

## Appendix

Exhibit 1-Mojave Northern Cost Effectiveness Calculations

Exhibit 2-Series 400 Specification/Fact Sheet

Exhibit 3-Resumes

Exhibit 4-Commitment Letter for Cost Sharing

Project Number	Applicant	Year of Funding	Source of Funding	Guideline Year	Railroad Class	E J Score	Project Address (Street Address)	Project Location (City)	Project Location (County)	Project Location (Zip Code)	Equipment Type	UNIT ID Number
Targeted Air Shed Grant Program	Mojave Northern Railroad	2020	TAG	2020	3	N/A	16888 N E Street	Victorville	San Bernardino	92394	Locomotive	GP39-2 MN 418

BASELINE											
Category		Reduced		Applicant's	TASG's Max				Emission Calculation		Baseline
Type (Line-Haul, Switcher, Short-Line	Baseline	(LEE) Engine/Retrofit Cost per Unit	GPS and / or ILD Only - Installation Cost	Grant Request per Unit	Percentage Award Allowed	Eligible Grant Amount per Equipment	Number of Locomotives	Total Project Eligible Grant Amount	Methodology (fuel, hours: must have hour meter)	Baseline Fuel Consumption (gal/yr)	Annual Hours of Operation
Short Line	n/a	\$2,754,000	Standard Software for Near Zero Emissions Locomotives	\$2,478,600	100%	\$2,754,000	1	\$2,754,000.00	Fuel	42,600	8,500

Percent Operation in District	Baseline Engine Serial Number	Baseline Fuel Type	Baseline Engine Model	Baseline Model Year	Preliminary Baseline Load Factor Moyer Table (%) (default 0.43)	Adjusted Baseline Load Factor (%)	Baseline Horsepower	Baseline Energy Consumption Factor (default 20.8 hp- hr/gal)	Baseline NOx EF (g/bhp-hr)	Baseline ROG EF (g/bhp-hr)	Baseline PM (g/bhp-hr)	REDUCED Category Type (Line-Haul, Switcher, Short- Line etc.)
100%	84-02-1005	Diesel	12-645-E3C	1984	0.43	0.43	2400	20.8	17.30	2.21	0.400	Road-Switcher

Reduced (LEV)											
Engine Serial Number	Reduced Engine Fuel Type	Reduced Engine Model or Retrofit Kit Name	Executive Order	Reduced Unit Tier ?	Reduced Fuel Consumption (gal/year)	Reduced Hours of Operation (hr/year)	Reduced Engine/ Retrofit Model year	Number of REDUCED engines	HP of EACH reduced engine	Reduced (LEE) Engine TOTAL Horsepower	Reduced (LEE) Engine Load Factor %
TBA	Diesel	KLW-MTU 12V4000 R54 T4L	TBA	4	34,080	7750	2021	1	2414	2414	0.12

Reduced (LEE) Energy Consumption Factor (default 18.5 hp-hr/gal)	Reduced NOx (g/bhp-hr) Certification Standard from EO	Reduced ROG EF (g/bhp-hr)	Reduced PM (gm/bhp-hr)	Project Life (years)	Cost per Unit	Cost for Total Project	Maximum Award Based on Incremental Cost and Grant Request	% Increase in Horse Power	Interest Rate for Capital Recovery Factor Calculatio	Capital Recovery	Per Equipment Baseline NOx Emissions (tons/year)
4.0	0.14	0.02	0.013	15	\$2,754,000	\$2,754,000	\$2,754,000	0%	2%	0.078	16.897

Per Equipment Baseline ROG Emissions (tons/year)	Per Equipment Baseline PM Emissions (tons/year)	Per Equipment Reduced NOx Emissions (tons/year)	Per Equipment Reduced ROG Emissions (tons/year)	Per Equipment Reduced PM Emissions (tons/year)	% Reduction NOx	Per Equipment NOx Reduction (ton/year)	Per Equipment ROG Reduction (ton/year)	Per Equipment PM Reductions (tons/year)	Total Project NOx Reductions (total tons/year)	Total Project ROG Reductions (total tons/year)
2.159	0.391	0.021	0.00	0.002	99%	16.88	2.16	0.389	16.877	2.155

Total Project PM Reductions (total tons/year)	% Reduction PM	PM Emissions Weighting Factor	TOTAL PROJECT Weighted Emissions Reductions (NOx+ROG+ WF * PM) (tons per year)	Cost-Effectiveness Limit (\$/ton)	Weighted Cost-Effectiveness (\$/ton)	Maximum Award considering CE Limit AND funding request	Project Cost-Effectiveness based on Maximum Award (\$/ton)	NOTES
0.389	99%	20	26.805	\$30,000	\$7,996	\$2,754,000.00	\$7,996	Replacement Unit



**KLW Near Zero Emissions Locomotives  
for Switcher, Road-Switcher and Line Haul Duty Cycles  
EPA Tier 4 Certified and CARB Verified  
BHP Models: NZE2000 & NZE2200 & NZE2300  
NZE2414 & NZE2800 & NZE3218  
Product Features and Benefits**

Exhibit 2 -  
Series 400  
Specification  
/Fact Sheet

**MTU 4000 Series Engines**

- World class supplier of heavy duty diesel engines for the locomotive, military, marine, off-road equipment and heavy industries. Headquartered in Friedrichshafen, Germany, MTU is a Rolls-Royce and Daimler Benz company which manufactures and load box tests each of its 4000 Series engines in Aiken, South Carolina for the North American rail markets.
- MTU engines are applied globally in new, remanufactured and repowered locomotives. In the most recent 10-year period, there are more than 3,000 locomotives worldwide operating with these MTU prime mover diesel engines.
- The horsepower range of MTU engine models for the locomotive switching, road- switching and line haul markets include 2000 bhp, 2200 bhp, 2300 bhp, 2414 bhp, 2800 bhp and 3218 bhp prime movers.
- Capacities for newly manufactured NZE Series locomotives and/or repower capacities available for existing four axle and six axle EMD, GE, Alco and Gen Set locomotives.
- 30,000-hour product life cycle between overhauls with a two-year parts and labor warranty and 3 years or 9,000 hours parts warranty on the engine block / crank case / crankshaft / camshafts / connecting rods. Alternatively, a 40,000-hour product life cycle can be achieved with a mid-life main & rod bearing change-out and utexed cylinder heads and high pressure common rail injector replacements at 24,000 hours.
- Extended engine life cycle or time between overhauls ensures no future EPA emissions upgrade requirements for the locomotives during the useful product life cycle of the engine; i.e., 30,000 hours = 10 years and 40,000 hours = 13 years. \* (assumes a normalized 3000 hours engine running time annually for switching, road haul and road-switching duty cycles).
- Use of the incremental oil reservoir (an enlarged capacity sump), centrifuge oil separator and 3.1 MTU approved synthetic oils extend the 92-day oil and filter change to 184 days, saving maintenance parts & labor costs and locomotive out of service time while improving equipment asset utilization (fewer shop transfer movements for the locomotive). Eliminates the need for checking engine oil dip sticks; oil is simply added to the reservoir sump and topped-off through periodic visual inspections.
- Advanced EPA ULEL certified engines without selective catalytic reducing agents and without after-treatments such as urea and/or diesel particulate filters for EPA Tier 3 models.
- EPA certified, and ARB verified engines only require diesel oxidation catalysts and a low dosage selective catalytic reducing agent (urea) for EPA and ARB NZE Series Tier 4 locomotive models.
- By design, MTU Series 4000 engines do not “soup”. This is accomplished in part through higher block temperatures (24V engine block heaters) and the TECU AESS feature.
- Push button start-up within the locomotive cab or in the engine room.

- These locomotives improve upon accelerated engine throttle response times for yard switching and car kicking operations compared to Gen Set locomotives.
- Low noise decibels (78dba or less) for quiet engine start-up and operation in any throttle notch setting.
- The fuel savings for the MTU Series 4000 engine product line ranges between 20% to 35%+ in switching, short haul and road-switching duty cycles compared to traditional SW, GP and SD Series EMD switcher and road-switcher locomotives.
- The MTU Series 4000 engines carry a standard two-year parts and labor warranty and may be extended to four years parts and labor, excluding the labor costs for engine removal and reinstallation.
- MTU technical support, remote and/or localized trouble shooting, and field application services are normally available from within a 75-100-mile radius of the installation site.
- There are 140+ MTU distribution centers and parts warehousing facilities located throughout North America.
- Knoxville Locomotive Works has MTU trained service technicians for field commissioning and follow-up technical services.

#### **ZF Heavy Duty Marine Gearbox**

- The ZF reduction gearbox is designed for a 2:1 ratio to adapt the higher speed MTU engines to the intermediate speed original equipment alternators; e.g.: AR10 / AR11 / AR15.
- The MTU engine and ZF gearbox are resiliently mounted to a skid mounted frame to isolate locomotive vibration for crew cab comfort and to eliminate torsional stresses to the engine when exposed to hard couplings and to mitigate damage from frame bending and distortions caused by collision impacts.
- The ZF gearbox and Geislinger couplings are designed to exceed the product life cycle of the engine and include a standard two-year parts and labor warranty which may be extended to four years parts and labor, excluding the labor costs for gearbox removal and reinstallation.

#### **Retaining OEM Critical Parts**

- OEM alternators, including the AR10, AR11 and AR15 models are normally retained from the originating locomotive main frames. These electrical-rotating assemblies are manufactured as new (when specified) or completely remanufactured with the availability of rebuildable cores. Traction motors are also available as new or completely remanufactured. Alternator and traction motor cores for the remanufacture process can be free issued by the end-user or supplied by KLW.
- Locomotive cabs and high voltage cabinets are replaced as new. The electrical cabinets are pressurized, and air filtered to eliminate dust, debris and water contamination while cooling against excessive heat build-up. Cabs and electrical cabinets may remain original, dependent on the condition, age and last state of remanufacture for the locomotive core.
- Locomotive long hoods are new replacement fabrications to adapt to the KLW-MTU drive train system and the Rocore radiant cooling package.
- Main frames, lower deck truck assemblies and traction motors are retained and completely remanufactured unless otherwise specified. All trucks include new Fat 40 wheels.

### **Modular Concept**

- The engine, gear box, air compressor, fuel filtration, oil reservoir and battery charging systems are modularized on a single platform for placement onto the remanufactured locomotive main frame.
- New cooling systems are modular for fitting onto the existing remanufactured main frame.
- Locomotive short haul and road-switcher core main frames and trucks are completely remanufactured for the 2000 bhp / 2200 bhp / 2300 bhp / 2414 bhp / 2800 bhp / 3218 bhp Series 4000 engine models. These include EMD, GE, Alco and gen set main frames and typically GP series or SD Series HTC trucks to reduce operator fatigue.
- New S-5506 crash worthy / anti-rollover fuel tanks are manufactured in standardized 2000-3000-4000-gallon capacities and include built-in high capacity (100 gallon) retention reservoirs.
- Clean, modular low-profile design creates added envelope space in the long hood for convenient maintenance accessibility to the KLV-MTU drive train system.

### **TMV Traction and Engine Control Unit (TECU)**

- An expanded and advanced micro-processor based locomotive control system for up to 50%+ improvement in anti-wheel slip adhesion capacities for short haul and road-switcher locomotives.
- Typically, KLV NZE Series short haul, road-switcher and line haul locomotives are ballasted between 265,000-295,000 pounds (four axle) and 410,000-425,000 pounds (six axle) to enhance tractive effort capacities.
- Automatic engine start-stop is standard equipment to eliminate unnecessary idling and fuel waste.
- Minimum fuel savings of between 15% to 35%+ with the inclusion of the TECU AESS system based on switching and road-switching locomotive duty cycles.
- Interfaces with the MTU engine ECM-9 electronic control system (ADEC) to maximize fuel economy and to mitigate NOx, PM, HC and CO emissions.
- Additional controls include: alternator, rpm and hp, cooling fans, engine heater, forward / reverse, transition, air compressor, auto ground relay set and load meter.
- Modular TECU design fits within a compact space (12 inches H x 14 inches W x 10 inches D).
- Flexible system with I/O board expandability to handle additional functions and controls.
- The TMV TECU is a highly reliable and user friendly locomotive control system with easy to read screens which do not "fault out".
- Durable electronic components which carry a standard two-year parts and labor warranty and may be extended to four years for parts replacement.

### **Other Equipment Specifications**

- The MTU Series 4000 engines require two diesel oxidation catalysts and SCR after-treatment (2.00% urea) for the EPA Tier 4 models.
- The 2000 bhp / 2200 bhp / 2300 bhp and 2414 bhp KLV-MTU Series 12V4000 R54 T4 and the 2800 bhp and 3218 bhp KLV- MTU Series 16V4000 R54 T4L engines to be supplied will be EPA Tier 4 certified, ULEL compliant and CARB verified.
- Due to the MTU fail safe high-pressure common rail injection system, new S-5506 crash worthy and anti-rollover compliant fuel tanks are included with the KLV NZE Series locomotives.
- The low profile Sullair rotatory air compressor is a low maintenance product (annualized oil change and air in-take filter replacements) which creates a significant increase in envelope space for additional cooling capacity for the MTU engine. A world class leader in air compressor manufacturing, this Sullair product generates a 310 CFM output (40% greater total CFM output than traditional reciprocating, high maintenance air compressors). Also available in 435 CFM output to reduce switching time for rail car air pressurization in longer train consists.

### **Equipment Options**

Locomotive mounted security cameras, front and rear.

**ECP& EAB Equipment:** Electronically controlled pneumatic braking with CCB26 electronic air brake. This is a Knorr-Bremse product which is currently utilized on a limited basis in the United States but more typically for the international rail markets. It is a reasonably mature product which may require some adjustments in the field for full performance and operability. To utilize the ECP with the new rail cars, the locomotives must be equipped with ECP equipment for car interface and operation. Knorr-Bremse is an ISO certified company.

**Automatic-Release Couplers:** Air-over-electric system which utilizes pneumatic cylinders, allowing the operator to press a button in the cab (on the control stand) to energize a solenoid air valve. Energizing the solenoid valve facilitates main reservoir air to the cylinder and actuates the cut lever. This system would be an FRA approved KLV design.

**Specialty Corrosion Protectants:** Custom epoxy coatings can be used on specific components, including the cooling fan blades, locomotive exterior prime sealant, etc. to minimize sand and/or salt air erosion of critical components on the locomotive structure.

EI DuPont and PPG Pittsburgh Paints are the suppliers. Both are ISO certified companies.

**On-Site Commissioning and Training**

KLW will provide up to 5 business days of on-site supervision, instruction and on-site operational training following arrival of the locomotives to the point of delivery. Since KLW NZE Series locomotive models incorporate a majority of the traditional mechanical and electrical rotating systems of EMD and GE series style units, training focuses predominantly upon the operation and maintenance of the MTU engine.

**Locomotive Warranty**

Each Locomotive shall meet the warranties of parts and labor for a period of twenty-four (24) months from the date of Final Acceptance; provided, however, that the electronic control system, drive train system, radiator, traction motor and alternator of each Locomotive shall meet the warranties for a period of forty-eight (48) months from the date of Final Acceptance through an extended warranty offering. Seller shall be responsible for performing the warranty work of parts and labor during the first twenty-four months from date of locomotive commissioning at the project site. Normal consumable items such as wheels, brake shoes, locomotive fluids, fuel, oil, anti-freeze, sand, water, bulbs, lights, fuses and filters are exempt from this twenty-four-month warranty in addition to the normal replacement consumables called-out by the maintenance manuals for this equipment. The forty-eight-month warranty extends exclusively to the electronic control system, drive train system, radiator, traction motors and alternator of each Locomotive as parts replacement only and specifically excludes labor. Outgoing shipment transportation costs of the warranted replacement parts are to the account of Seller; return shipment transportation costs of damaged cores (as applicable) are to the account of Buyer. Repair or replacement shall be initiated promptly and shall be pursued diligently and continuously to minimize the impact of such deficiencies on the Buyer's operations.

**About Knoxville Locomotive Works**

- 36 years of experience in the railway industry and locomotive remanufacturing, rebuilding and service repairs under the Gulf & Ohio Railways umbrella.
- Strong financial balance sheet and long-term business stability.
- Patented KLW design bearing adapter to support the existing alternator and patented MTU design for high speed engines driving intermediate and low speed alternators.
- Engine, gear box, couplings, radiator, electronic controls, electrical cabinet, HVAC alternator, traction motors, auxiliary generator, air compressor, fuel tank and bearing adapter sub-contract manufacturers are ISO 9001:2008 certified. KLW has initiated an ISO 9001:2008 program through the University of Tennessee for the KLW expansion facilities in Knoxville.
- Advanced EPA, ULEL and CARB verified Tier 3 and Tier 4 emissions certifications combined with U.S. manufacturing qualify KLW NZE Series locomotive products for federal, state and local grant funding.
- Customer accounts include Class I railroads, short lines, industrials, equipment leasing companies, government and international clients.



### **Pricing**

KLW NZE23B DE T4L EPA Tier 4 Near Zero Emissions locomotive: \$2,724,500 ex-works Knoxville, TN

Estimated rail transport freight costs from Knoxville, TN to Victorville, CA @ \$29,500

Estimated sales and use tax for the City of Exeter, CA (CBOE 7.75% rate) @ \$213,435

Total: \$2,967,435

### **Payment Terms**

50% at time of order placement; 40% upon inspection and acceptance at manufacturing facility; 10% net 30 days following locomotive delivery, training, commissioning and final locomotive performance acceptance at the project site.

### **Delivery**

7 to 9 months from date of notification to proceed for order placement(s) on/or before October 1, 2020.

Delivery lead-times for order notifications after this date are subject to manufacturing backlog and frozen production schedules at the time of order placement.

### **Proposal Validity Period**

Valid through December 31, 2020

### **Sales Tax Status**

**Clients are required to provide adequate sales tax exemption documentation and/or or resale certification to exclude taxes otherwise normally included with locomotive purchases. Based upon current California Board of Equalization tax rates for the City of Victorville, the effective use tax is 7.75% equating to \$213,435 for this transaction (quantity one KLW NZE23B DE T4L).**



## Gulf & Ohio Railways, Inc.

P.O. Box 2408 • 422 W. Cumberland Ave. • Knoxville, TN 37901  
Office: (865) 525-9400 • Fax: (865) 546-3717

Exhibit 4-Commitment  
Letter for Cost Sharing

January 31, 2020

Mr. Carlos Gabriel Uruchurtu Bustamante  
Vice President Western Region Cement Operations  
CEMEX  
16888 N E Street  
Victorville, California 92394

Re: Targeted Air Shed Grant Program  
Near Zero Emissions Four Axle Locomotive  
CEMEX-Victorville CA NZE23B DE T4L

Dear Mr. Bustamante

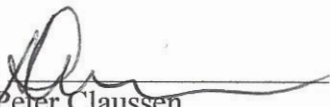
After reviewing the above referenced grant proposal, Gulf & Ohio Railways, Inc. ("G&O") is pleased to off our commitment to provide \$102,286.00 in matching support for the proposed grant to the project entitled "CEMEX-Victorville NZE23B DE T4L Targeted Air Shed Grant Program." The support is to be provided upon the grant award.

Of this support, \$102,286.00 is committed as direct cash by Gulf & Ohio Railways, Inc. for the replacement locomotive work scope contemplated by this Project. Gulf & Ohio Railways, Inc. is very confident in the clean air benefits to be derived from this Project.

Should you require any additional information with respect to Gulf & Ohio Railways, Inc.'s commitment, please do not hesitate to contact me.

Sincerely,

Gulf & Ohio Railways, Inc.

By:   
H. Peter Claussen  
Chairman